

## ABSTRACT

An objective is to perform pulse modulation so as to allow for an effect of inter-symbol interference in the UWB communication. For this purpose, a reference clock signal is generated. Spread data is sequentially output at a specified timing synchronized with the reference clock. In this case, the spread data results from directly spreading transmission data with a spreading code. The spread data is distributed into two sequences of data at a specified timing synchronized with the reference clock. First and second pulse shaping signals are generated at a specified timing synchronized with the reference clock. A cosine carrier and a sine carrier are generated. One of the two sequences of data is multiplied by the first pulse shaping signal and the cosine carrier. The other of the two sequences of data is multiplied by the second pulse shaping signal and the sine carrier. Outputs from the multiplications are synthesized to acquire an output signal for transmission.